

Serial No.: 10/018,795

IN THE CLAIMS:

1.-3. (Cancelled)

4. (Currently Amended) A thin film transistor comprising:
a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, and a drain region, the source region and the drain region ~~disposed~~ respectively located on either side opposite sides of the channel region, the drain region having formed therein a lightly doped drain (LDD) region; and

wherein the relationship of expression (2)

$$\frac{(R+30) \cdot W}{1} < 1 \times 10^3 \quad (2)$$

is satisfied, where R (k Ω /□) is the sheet resistance of the LDD region and W (μ m) is the channel width of the channel region, the channel width W of the channel region being 2 μ m or less.

5. (Cancelled)

Serial No.: 10/018,795

6. (Previously Presented) A thin film transistor according to claim 4, wherein the sheet resistance of the LDD region is in the range of from 20 k Ω /□ to 100 k Ω /□.

7. (Cancelled)

8. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~opposite sides of the channel region and the low concentration impurity region being formed in at least one of a region between the source region and the channel region and a region between the drain region and the channel region, the thin film transistor wherein:

the relationship of expression (3)

$$\underline{\Delta L > (W \cdot Vt_c) / 36} \quad (3)$$

Serial No.: 10/018,795

is satisfied, where ΔL (μm) is the length of the low concentration impurity region, V_{lc} (V) is the source-drain voltage, and W (μm) is the channel width of the channel region, the channel width W (μm) of the channel region being 2 μm or less.

9. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~ opposite sides of the channel region and the low concentration impurity region being formed in at least one of the region between the source region and the channel region and a region between the drain region and the channel region, the thin film transistor wherein:

the relationship of expression (4)

$$\underline{\Delta L < 1.5 \cdot (W / L)} \quad (4)$$

Serial No.: 10/018,795

is satisfied, where ΔL (μm) is the length of the low concentration impurity region, W (μm) is the channel width of the channel region, and L (μm) is the channel length of the channel region, the channel width W (μm) of the channel region being 2 μm or less.

10. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~ opposite sides of the channel region and the low concentration impurity region being formed in at least one of the region between the source region and the channel region and a region between the drain region and the channel region, the thin film transistor wherein:

the relationship of expression (20)

$$(W - V_{le} \frac{W \cdot V_{lc}}{36}) / 36 < \Delta L < 1.5 \cdot (W/L) \quad (20)$$

Serial No.: 10/018,795

is satisfied, wherein ΔL (μm) is the length of the low concentration impurity region, V_{lc} (V) is the source-drain voltage, W (μm) is the channel width of the channel region, and L (μm) is the channel length of the channel region, the channel width W (μm) of the channel region being 2 μm or less.

11. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~opposite sides of the channel region and the low concentration impurity region being formed in at least one of a region between the source region and the channel region and a region between the drain region and the channel region, the thin film transistor, wherein the sheet resistance of the low concentration impurity region is in the range of from 20 $\text{k}\Omega/\square$ to 100 $\text{k}\Omega/\square$.

Serial No.: 10/018,795

12. (Cancelled)

13. (Original) A thin film transistor according to claim 11, wherein the low concentration impurity region is formed only in the region between the drain region and the channel region.

14. (Cancelled)

15. (Currently Amended) A liquid crystal display device comprising:

a liquid crystal panel portion comprising thin film transistors serving as switching elements, each of the thin film transistors having a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, and a drain region, the source region and the drain region respectively located~~disposed on either side~~opposite sides of the channel region, the drain region having formed therein a lightly doped drain (LDD) region; and

a backlight portion for supplying light from a rear surface side of the liquid crystal panel portion;

Serial No.: 10/018,795

wherein the relationship of expression (6)

$$\frac{(R+30) \cdot B \cdot W}{1} < 1 \times 10^6 \quad (6)$$

is satisfied, where R ($\text{k}\Omega/\square$) is the sheet resistance of the drain region, B (cd/m^2) is the luminance of the backlight portion, and W (μm) is the channel width of the channel region, the channel width W being 2 μm or less.

16. (Cancelled)

17. (Currently Amended) An EL display device comprising a light-emitting layer and a counter electrode formed thereon, the light-emitting layer being on a pixel electrode upper layer formed on a substrate having thin film transistors, each of the thin film transistors comprising:

a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, and a drain region, the source region and the drain region respectively located~~disposed on either side~~ opposite sides of the channel region, the drain region having formed therein a lightly doped drain (LDD) region; and

wherein the relationship of the expression (6)

$$\frac{(R+30) \cdot B \cdot W}{1} < 1 \times 10^6 \quad (6)$$

is satisfied, where R ($k\Omega/\square$) is the sheet resistance of the LDD region, B (cd/m^2) is the light intensity of light applied to the channel region, and W (μm) is the channel width of the channel region, the channel width W being 2 μm or less.

18.-20. (Cancelled)

21. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~ opposite sides of the channel region and the low concentration impurity region being formed in at least one of the region between the source region and the channel region and a region between the drain region and the channel region, the thin film transistor wherein:

the relationship of expression (4)

$$\frac{\Delta L < 1.5 \cdot (W / L)}{(4)}$$

is satisfied, where ΔL (μm) is the length of the low concentration impurity region, W (μm) is the channel width of the channel region, and L (μm) is the channel length of the channel region, the channel width W (μm) of the channel region being 2 μm or less, wherein the sheet resistance of the low concentration impurity region is in the range of from 20 $\text{k}\Omega/\square$ to 100 $\text{k}\Omega/\square$.

22. (Currently Amended) A thin film transistor comprising a polycrystalline silicon semiconductor layer having formed therein a channel region, a source region, a drain region, and a low concentration impurity region having an impurity concentration less than that of the source region and the drain region, the source region and the drain region being respectively located~~disposed on either side~~opposite sides of the channel region and the low concentration impurity region being formed in at least one of the region between the source

Serial No.: 10/018,795

region and the channel region and a region between the drain region and the channel region, the thin film transistor wherein:

the relationship of expression (20)

$$(W \cdot V_{lc} - V_{le}) / 36 < \Delta L < 1.5 \cdot (W/L) \quad (20)$$

is satisfied, wherein ΔL (μm) is the length of the low concentration impurity region, V_{lc} (V) is the source-drain voltage, W (μm) is the channel ~~length~~ width of the channel region and L (μm) is the channel length of the channel region, the channel width W (μm) of the channel region being 2 μm or less, wherein the sheet resistance of the low concentration impurity region is in the range of from 20 $\text{k}\Omega/\square$ to 100 $\text{k}\Omega/\square$.